

REMARKS

Applicant appreciates the courtesies extended to his representative, Allan Fanucci, during an interview with Examiner Edna Wong on April 12, 2006. The comments appearing herein are substantially the same as those that were presented and discussed during the interview.

Claim 19, was amended, and new claims 20-37, were presented in response to the final rejection, and now claims 19-37, as amended, are submitted herewith for the Examiner's review and consideration. Certain claims were further amended to address the issues raised in the latest Advisory Action. Claim 19 had been written in independent form while new claim 32 was a claim of similar content but written in Jepson form. Claims 21-31 and 33-37 were rewritten versions of claims 2-12 and 17-19. Furthermore, claims 25, 27, 29 and 36 were further amended herein to recite that it is the solution that further comprises the additional components so that those claims further define the claims from which they depend. In response to the latest advisory action, claims 27, 33 and 35 were further amended to correct the informalities noted in the advisory action. No new matter has been entered by any of these claim changes, so that they should be entered at this time to reduce the issues for appeal by reducing the number of claims. Furthermore, for the reasons that follow, it is believed that these claims are now in condition for allowance.

The previous claims were again rejected as being unpatentable over Japanese patent application 2-301,588 ("the '588 reference") for the reasons set forth in the office action.

The present invention is now further defined to be directed to a method for electroplating a metal deposit on a substrate which comprises contacting a plurality of such substrates with a solution that has a particular pH range and that contains a complexing agent and metal ions in a particular ratio range that provides metal electrodeposits on the substrates without causing significant agglomeration of such substrates during the electroplating.

As noted in the office action, the '588 reference does not disclose the presently claimed combination of pH range and concentration ratio. The pH range is not critical in the '588 reference and can range from between 2 and 9. And while a pH of 3.5 to 5.5 is included within that range, there is no importance or criticality attached to it. The examples of the '588 reference have pHs between 6 and 7.5, and this suggests that optimum performance is found when a near-neutral electroplating solution is used. In contrast, the present invention requires a

pH of between 3.5 and 5.5 and preferably around 4 for best results. Thus, the skilled artisan is not motivated to use the presently claimed pH range.

The latest Advisory Action explains that the presently claims pH range is not critical. In response, applicants submit herewith a Rule 132 Declaration of Dr. George Hradil to establish that the presently claimed baths are only stable at the disclosed and claimed pH range. This declaration further establishes that the baths of the prior art '588 reference are not stable at other pHs due to precipitation of the metal salts. The photographs attached to the declaration clearly illustrate precipitation at pHs greater than 5.5 as evidenced by the cloudy appearance of the solution. At the preferred pH taught by the '588 reference, namely a pH of 7, significant tin precipitation can be seen as the white layer of tin hydroxide in the bottom of the beaker. Furthermore, Figures 4 and 5 of the previously submitted technical paper of Hradil and Federaman illustrate that improvements in agglomeration (i.e., less coupling) of the parts to be electroplated) are found at pHs above about 3.5 to 4.5, thus confirming the criticality of the lower end of the presently claimed pH range. Furthermore, solutions having a pH below 3.5 become very aggressive to the components or electronic parts to be plated. Thus, the declaration clearly shows that the presently claimed pH range is in fact critical and this criticality is not disclosed or inherent in the JP '588 reference.

Furthermore, the '588 reference also fails to disclose or teach the importance of the claimed complexing agent to metal ion concentration ratio. The wide ranges of amounts of complexing agent and metal ions in the '588 patent are for the most part outside of the specific range that is presently claimed and that has been found to provide an unexpected reduction of substrate agglomeration during electroplating.

The criticality and importance of the metal ion and complexing concentrations are discussed in the specification as well as in the Declaration of Dr. Hradil, and these documents further support the patentability of the present claims. Also, the significance of the problem of agglomeration of parts during electroplating was explained in the prior amendment and is incorporated herein by reference. To advance the prosecution of this application, however, the applicant now presents claims that are commensurate with the unobvious advantages of the invention. These claims are directed to an electroplating method that provides metal electrodeposits on various substrates, particularly those that have electroplatable and non-

electroplatable portions and that are intended for electronic applications, while avoiding or not causing significant agglomeration of such substrates during electroplating.

It is respectfully submitted that the present claims are not anticipated by the '588 reference, since this advantage is not disclosed. These claims are also not obvious over the '588 reference because the present method is not taught or disclosed, nor is it inherently achieved by following the disclosure of that reference. In particular, a skilled artisan is not led to combine the presently claimed pH range and complexing agent to metal ratio in a particular electroplating solution, nor to use such a solution to minimize agglomeration of the substrates during electroplating. In view of the above, all rejections based on the '588 reference have been overcome so that that rejection should be withdrawn.

Accordingly, it is believed that the entire application is now in condition for allowance, early notice of which would be appreciated.

Respectfully submitted,

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Date



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